STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME: Steven Left *ROAD PLAN DATE: May 5, 2004*

SCOPE OF PROJECT

This project includes, but is not limited to new construction including: clearing, grubbing, right-of-way debris disposal, excavation and/or embankment to subgrade, landing construction, acquisition and installation of drainage structures, and hauling and application of rock.

This project also includes, but is not limited to reconstruction including:

Road	Stations	Requirements
LS 3+75	0+00-3+75	Clean ditch lines, grade and shape subgrade, apply rock as per rock list.

This project also includes, but is not limited to pre-haul maintenance including:

Road	Stations	Requirements
RY-7500	MP 0-0.9	Brush road right of way, clean ditchlines, grade and shape.
RY-7500.6	MP0.9-2.4	Brush road right of way, clean ditchlines, grade and shape.

SECTION 1 - GENERAL CLAUSES

1.1-1

Clauses in this plan apply to all construction or reconstruction or pre-haul maintenance including landings unless otherwise noted.

1.1-2

Construction or reconstruction or pre-haul maintenance of the following road/s is required. All road/s shall be constructed on the State's location and in accordance with the Road Plan.

Road	Length	Type
RY-7500	0.9 Mile	Pre-haul maintenance
RY-7500.6	1.5 Miles	Pre-haul maintenance

1.1-3

Construction or reconstruction or pre-haul maintenance of the following road/s is not required. **If the Purchaser elects to use any of these roads, they shall be constructed or reconstructed on the State's location and in accordance with this Road Plan.**

Road	Length	Type
LS 17+19	17.19 stations	Construction
LS 3+75	3.75 stations	Reconstruction
LS 7+87	7.87 stations	Construction
LS 4+52	4.52 stations	Construction

1.1-4

Any departure from this Road Plan including relocation, extension, change in design or additional roads shall be submitted, in writing, to the Contract Administrator for consideration. Submitted plans must be approved before construction begins.

1.1-5

On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to, solid subsurface rock, subsurface springs or saturated ground, and unstable soil.

1.2.1-1

Pioneering shall not extend past construction that will be completed during the current construction season. Drainage shall be provided on all uncompleted construction as approved, in writing, by the Contract Administrator.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culvert placement in live streams shall precede embankment where culverts are to be placed along natural ground. Temporary diversion culverts shall be provided when designed culverts are elevated above natural ground within embankments.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches and culvert installation shall be completed and are subject to written approval by the Contract Administrator prior to rock application.

1.2-2

Purchaser shall not use roads constructed or reconstructed or pre-haul maintained under this Road Plan for hauling, other than timber cut on the right of way, without written approval from the Contract Administrator.

1.2-3

All roads shall be constructed using track mounted hydraulic excavators unless otherwise authorized, in writing, by the Contract Administrator.

SECTION 2 - CLEARING

2.1-1

Fell all vegetative material larger than 6 inches dbh or over 20 feet high between the marked right-of-way boundaries and within waste areas or if not marked in the field, between clearing limits specified on Typical Section Sheet.

2.1-3

Right-of-way timber shall not be decked within the grubbing limits or in locations that interfere with the construction of the road prism, as defined by the Contract Administrator. Right-of-way timber shall not be decked in locations that impede drainage.

SECTION 3 - GRUBBING

3-2

Grubbing limits are defined as the entire area between external limits shown on the Typical Section Sheet.

3-3

Removal of stumps is not required, provided that they are cut flush with the ground.

SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

4.1-1

Right-of-way debris is defined as all vegetative material larger than one cubic foot in volume, within the clearing limits.

4.1-2

All right-of-way debris disposal shall be completed prior to application of rock.

4.2.3-3

Right-of-way debris shall not be placed against standing timber.

4.2.3-4
Right of way debris shall be scattered outside the grubbing limits.

SECTION 5 - EXCAVATION

5.1-1
Unless controlled by construction stakes or specific design sheets herein, roads shall be constructed in accordance with dimensions shown on the Typical Section Sheet.

5.1-3
The construction of road grade and alignment shall conform to the State's marked location. The reconstruction of existing road grades shall conform to the original location except as directed by the contract administrator. Grade and alignment shall have smooth continuity, without abrupt changes in direction.

Construction limitations are as follows:

Favorable Grade	Adverse Grade	Minimum Curve Radius
18%	12%	60 feet

5.1-4
Extra widening on the inside of curves shall be:

2 feet extra --- 80 to 100 foot radius curves
4 feet extra --- 60 to 80 foot radius curves

5.1-5
Curve widening where required, shall be added to the inside of curves.

5.1-8
Excavation slopes shall be constructed no steeper than shown on the following table (except as construction staked or designed):

Material Type	Excavation Slope Ratio
Common Earth (on side slopes to 55%)	1:1
Common Earth (55% to 70% sideslopes)	3/4:1
Common Earth (on slopes over 70%)	1/2:1
Fractured or loose rock	1/2:1
Hardpan or solid rock	1/4:1

5.1-9
Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-10
Embankments shall be widened as follows:

Height at Shoulder	Subgrade Widening
Less than 6 feet	2 feet
6 feet or over	4 feet

5.1-11
Embankment slopes shall be constructed no steeper than shown on the following table:

Material Type	Embankment slope ratio
Common earth and rounded gravel	1-1/2:1
Angular rock	1-1/4:1
Sandy Soils	2:1

5.1-12

Organic material shall be excluded from embankment shown on Typical Section Sheet and from waste material deposited on slopes in excess of 40 percent.

5.1-15

Excavated material may be deposited adjacent to the road prism on side slopes up to 45 percent if the material is compacted and more than 50 feet away from live streams.

5.1-21

Waste material shall not be deposited within 50 feet of a live stream or wetland.

5.1-24

Turnouts shall be intervisible with a maximum of 1,000 feet between turnouts unless shown otherwise on drawings.

5.2-1

Pioneering operations shall not undercut the final cut slope, deposit excavated material outside the right-of-way limits or restrict drainage.

5.3-1

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over the entire width of the lifts. Side hill embankments too narrow to accommodate excavation equipment may be placed by end-dumping or side casting until sufficiently wide to support the equipment.

5.4-1

Silt-bearing runoff, as defined by the Contract Administrator, shall not be permitted to go into streams.

5.4-2

Accomplish sediment removal through silt traps, silt fences, settling ponds or other methods to be approved, in writing, by the Contract Administrator.

5.5-5

Finished subgrade shall be crowned as shown on the Typical Section Sheet. Grade and compact to a uniform, firm, rut-free surface to ensure surface runoff in an even unconcentrated manner.

5.6-5

Subgrade Reinforcement shall be installed as part of this project to strengthen the subgrade base and/or reinforce the installation of large culverts. Reinforcement fabric shall be a minimum of 15 feet in width, and shall meet or exceed the properties of DuPont TYPAR 3601, Exxon GTF 300, AMOCO 2006, or Synthetic Industries Geotex 315ST. The purchaser is required to supply the following reinforcement fabric for this project:

Road	Stations
LS 7+87	4+15-5+12

SECTION 6 - DRAINAGE

6.2.1-1

Purchaser shall furnish, install and maintain corrugated polyethylene and/or aluminized steel Type 2 (ASTM A929, A760, A796, AASHTO M274, M36) pipe as designated on Culvert List. Culvert and flume lengths shall be varied to fit as built conditions subject to written approval by the Contract Administrator.

Note: Temporary culverts may be galvanized steel.

6.2.1-1A

Corrugated polyethylene pipe shall have a corrugated exterior and smooth interior, shall meet ASTM F405,F667 and AASHTO M252,M294 Standard Specifications, and shall be manufactured with high density polyethylene resins.

6.2.1-2

Manufacturer's approved connectors shall be used for corrugated polyethylene pipe. Annular corrugated bands and culverts ends shall be used on aluminized steel pipe.

6.2.2.1-1

Culvert, downspout, flume and energy dissipater installation shall be in accordance with Culvert and Drainage Specification Detail.

6.2.2.3-1

Cross drains and surface culverts on road grades in excess of 3% shall be skewed at least 30 degrees from perpendicular to the road centerline.

6.2.2.3-2

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3 percent nor more than 10 percent.

6.2.2.5-1

Drainage structure outfalls shall not terminate directly on unprotected soil that will erode. Downspouts, flumes and energy dissipaters shall be installed to prevent erosion.

6.3-1

Ditches shall be constructed prior to application of rock. Ditches shall drain to culverts, ditchouts and natural drainages.

6.3-2

Shaping the ditchline, culvert headwalls and catchbasins shall be completed prior to application of rock and shall be done in accordance with the Typical Section Sheet and Drainage Specification Detail.

6.4-1

Catch basins shall be constructed to resist erosion. Minimum dimensions: two feet wide and four feet long with backslopes consistent with Clause 5.1-8: Excavation Slopes.

6.5-1

Head walls shall be constructed in accordance with Culvert and Drainage Specification Detail at all cross-drain culverts.

6.5-2

Embankment slopes adjacent to culvert inlets and outlets shall be armored for a distance of two culvert diameters on each side of the pipe and one culvert diameter above the pipe in accordance with Culvert List.

SECTION 7 - ROCK

7.1-3

Rock for construction and/or reconstruction under this contract may be obtained from commercial sources. Rock sources will be subject to written approval by the Contract Administrator prior to their use.

7.1-5

Use of all rock sources are subject to written approval from the Contract Administrator.

7.2.1-1

Rock shall meet the following specifications for gradation when placed on the subgrade. No more than 10% of the rock shall be larger than 8 inches in any dimension and no rock shall be larger that 12 inches in any dimension.

7.4.2-1

Apply at least the minimum required rock quantity as shown on the Rock List.

7.4.2-2

Subgrade shall be approved, in writing, by the Contract Administrator prior to application of rock.

7.4.2-8

Each lift of rock shall be shaped as shown on the Rock List and shall be uniform, firm, rut-free and shaped to ensure surface runoff in an even unconcentrated manner.

7.4.3-3

Rock shall be spread, shaped and compacted concurrently with rock hauling operations.

SECTION 9 - ROAD AND LANDING ABANDONMENT

9.1-1

The following roads shall be abandoned by the purchaser within 10 days following completion of timber harvest. LS 17+19, LS 7+87, LS 4+52.

9.1-2

Road abandonment shall consist of:

1. Removing all temporary culverts. Resulting backslopes shall be 1:1 or shallower. Material removed shall be placed on the road bed and compacted, with slopes of 2:1 or shallower. Where flowing water is present, the average natural stream width shall be reestablished.

2. All removed culverts are the property of the Purchaser and shall be removed from State land.

3. Construct non-driveable water bars in locations as directed by the Contract Administrator. Water bars shall intercept the ditch line, be keyed into the road cut slope and freely drain. On grades in excess of 3%, water bars shall be skewed 30 degrees from the perpendicular of the road centerline.

4. Remove any berms, except as directed.

5. Purchaser shall furnish and apply grass seed to all areas of exposed soil. Including but not limited to: new cut slopes, fill slopes, ditch lines, water bars, culvert removal sites and tank traps. Grass seed shall be applied at a rate of 60 pounds per acre.

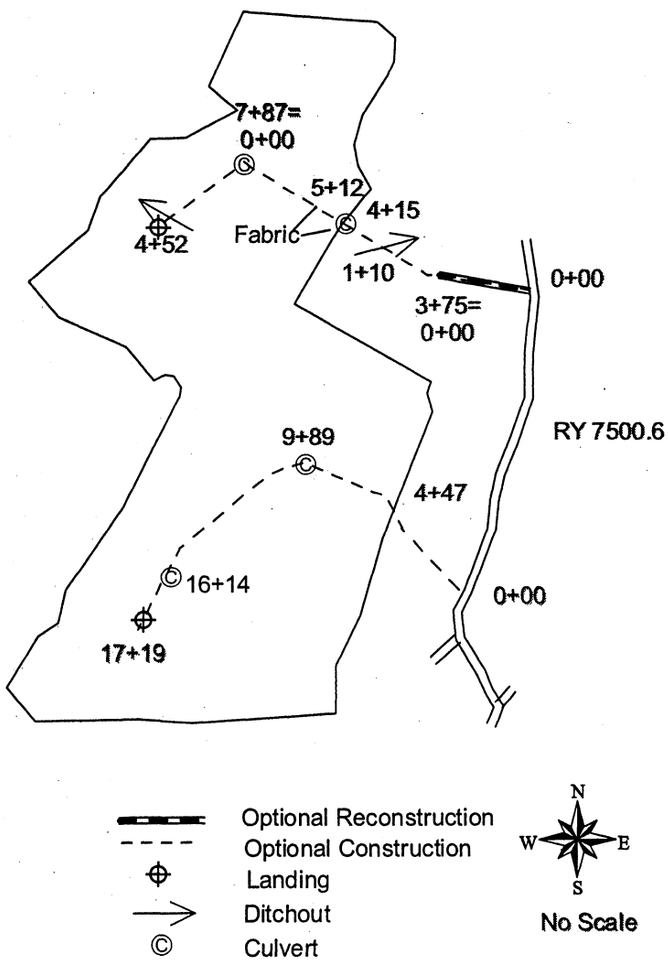
6. Block the roads to vehicular traffic by the means of "tank traps".

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME: Steven Left *ROAD PLAN DATE: May 5, 2004*

Plan View

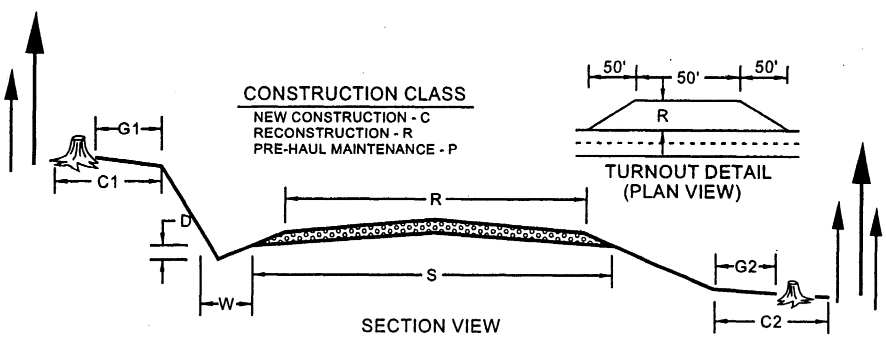


STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME: Steven Left *ROAD PLAN DATE: May 5, 2004*

TYPICAL SECTION SHEET



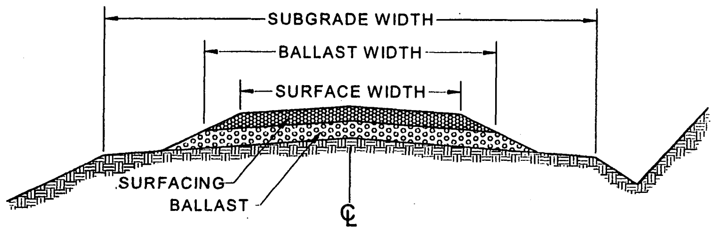
ROAD NAME	START STATION	END STATION	CONSTRUCTION CLASS		SUBGRADE WIDTH (S)	ROAD WIDTH (R)	CROWN " AT CL	DITCH WIDTH (W)	DITCH DEPTH (D)	GRUBBING CUT BANK (G1	GRUBBING FILL TOE (G2)	ROAD CUT CLEARING (C1)	ROAD FILL CLEARING (C2)	
All New Construction						10'	3"	3'	1'					

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME: Steven Left *ROAD PLAN DATE: May 5, 2004*

ROCK LIST



SECTION VIEW

1. **Rock quantities, subtotals and totals are "truck measure" estimates. Rock shall be applied to at least the depths listed. All depths are compacted depths.**
2. **Rock slopes shall be 1½ (H) : 1 (V).**
3. **All rock sources are subject to approval by the Contract Administrator.**
4. **Rock source A= Commercial Sources**
   Rock source B=

ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	BALLAST SOURCE	BALLAST WIDTH (ft)	BALLAST DEPTH (in)	BALLAST QUANTITY (cu.yd./sta	BALLAST SUBTOTAL (cu.yd)	SURFACE SOURCE	SURFACE WIDTH (ft)	SURFACE DEPTH (in)	SURFACE QUANTITY (cu.yd./sta	SURFACE SUBTOTAL (cu.yd)
LS 17+19	0+00	17+19	15'	A	10'	18"	95	1633					
LS 3+75	0+00	3+75		A	10'	12"	60	225					
LS 7+87	0+00	7+87	15'	A	10'	18"	95	748					
LS 4+52	0+00	4+52	15'	A	10'	18"	95	430					
Landings								100					

BALLAST TOTAL = 3136 **SURFACE TOTAL** = 0

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME: Steven Left *ROAD PLAN DATE: May 5, 2004*

CULVERT LIST

ROAD NAME	STATION	CULVERT DIAMETER (in)	CULVERT LENGTH (ft)	FLUME LENGTH (ft)	DOWNSPOUT LENGTH (ft)	RIP RAP- INLET (cy)	RIP RAP - OUTLET (cy)	BACKFILL MATERIAL	NOTES
LS 17+19	9+89	18"	28'					NT	Temporary
LS 17+19	16+14	18"	28'					NT	Temporary
LS 7+87	4+15	18"	28'					NT	Temporary
LS 4+52	0+00	18"	24'					NT	Temporary

All rip rap shall be 8" – 12" quarry spalls unless specified otherwise.
All backfill shall be native material unless specified otherwise.

Required Minimum Gauge for Metal Pipe

Diameter	Gauge
18"	16
24" - 42"	14
48" - 54"	12
60" - 96"	10

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME: Steven Left *ROAD PLAN DATE: May 5, 2004*

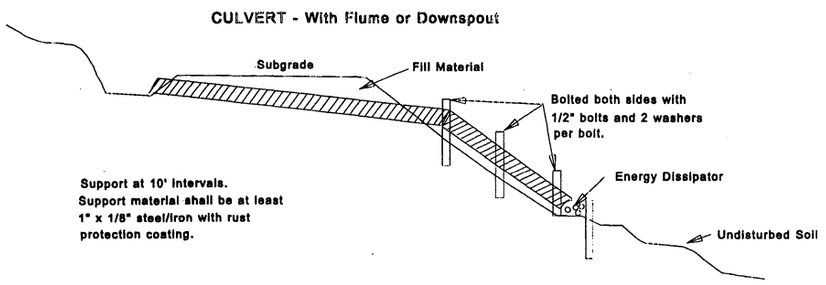
CULVERT AND DRAINAGE SPECIFICATION DETAIL

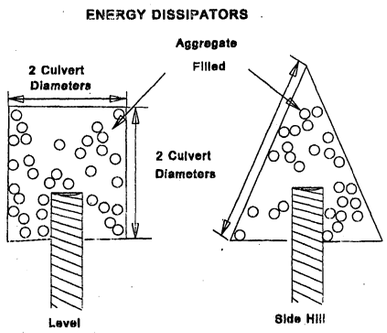
INSTALLATION REQUIREMENTS:

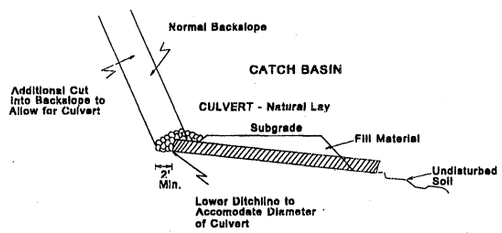
1. Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.

2. All bedding material of poor or non-uniform bearing capacity shall be removed and replaced with suitable fill. Crushed stone, gravel or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4", whichever is smaller. All material shall be compacted in six inch layers under the haunches, around the sides and above the pipe to the minimum height of cover.

3. Crushed stone and gravel backfill materials shall be compacted to a level of 90-95% AASHTO standard density. When native soils are used as backfill material, a compaction level of 85% is required. This minimum compaction can be achieved by either hand or mechanical tamping.







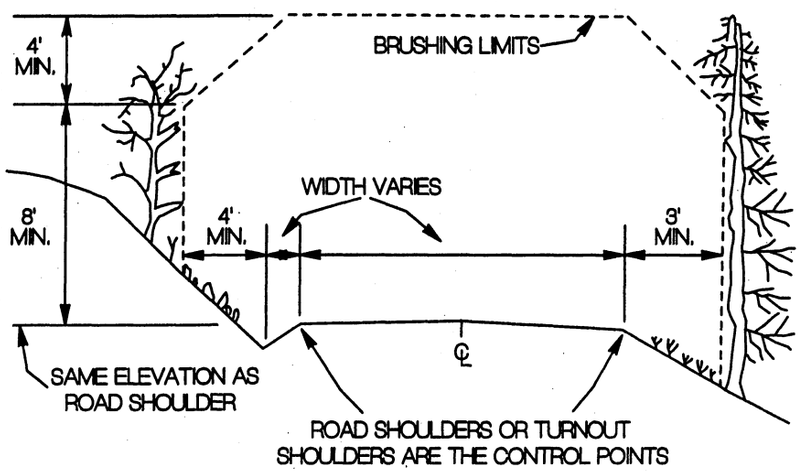
DISSIPATOR SPECIFICATIONS:
Depth: 1 culvert diameter
Aggregate: 6" plus

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

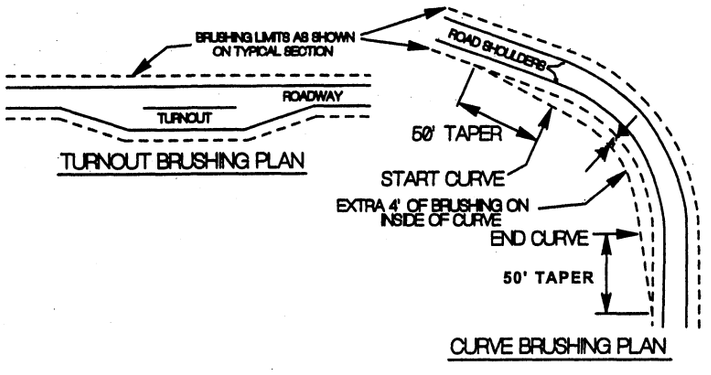
ROAD PLAN

SALE NAME: Steven Left *ROAD PLAN DATE: May 5, 2004*

BRUSHING DETAIL



TYPICAL BRUSHING LIMITS SECTION



1) ALL VEGETATION WITHIN THE BRUSHING LIMITS SHALL BE CUT TO WITHIN 8" OF THE GROUND, UNLESS OTHERWISE DIRECTED BY THE CONTRACT ADMINISTRATOR.
2) ALL BRUSH, TREES, LIMBS, ETC. SHALL BE REMOVED FROM THE ROAD SURFACE.
3) ALL BRUSH, TREES, LIMBS, ETC. THAT MAY RESTRICT THE FLOW OF WATER SHALL BE REMOVED FROM THE DITCH LINE.
4) ALL DEBRIS THAT MAY ROLL OR MIGRATE INTO THE DITCHLINE SHALL BE REMOVED.